

2.—THE OCCURRENCE OF THE GENUS CONOCLYPUS IN THE NORTH-WEST DIVISION, WESTERN AUSTRALIA.

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In 1936, Mr. E. A. Rudd, M.Sc., when associated with Oil Search, Ltd., of Sydney, collected three specimens of a large echinoid from the east flank Cape Range, Exmouth Gulf Station, North-west Australia, whilst further examples were recently discovered in the same region by geologists attached to Caltex (Australia) Oil Development Pty., Ltd. All specimens have kindly been made available for examination. The tests are embedded in a pink to ochreous limestone containing species of *Lepidocyelinae* characteristic of the Middle Miocene in the Indo-Pacific. The form has been determined as *Conoclypus*, a rare genus only previously recorded from the Eocene in areas outside Australia.

The occurrence of *Conoclypus*, according to Morley Davies (1935) is "widespread in the Cretaceous, but unknown in Cainozoic of America or Australia." It is recorded from the Eocene of India, Egypt, Madagascar, Mozambique, and Persia, as well as from countries in southern Europe. "Its geological range thus follows the large *Nummulites* and like them, it never reached America and is apparently extinct after Middle Eocene."

All specimens are in the Commonwealth Palaeontological Collection, Canberra, Australia. The photographs of the types were taken by Dr. F. W. Clements, Australian Institute of Anatomy, Canberra.

DESCRIPTION OF SPECIES.

Plate I., figs 1-3.

Class ECHINOIDEA Brown.

Order HOLECTYPOIDA.

Family ECHINONEIDAE.

Genus CONOCLYPUS Agassiz.

Conoclypus westraliensis sp. nov.

Holotype.—Although a specimen has been selected as a holotype, the species cannot be fully described without referring to characters which are better illustrated in further specimens.

Test moderately large, almost circular in outline, broadest behind apical system above periproet; moderately convex to subconical on aboral surface, with a flat adoral face. Entire test covered with small tubercles sunken in rounded serobicles. Apical system slightly praecentral or forward. Ambulacral and interambulacral plates only visible in worn specimens. Genital plate distinct with four genital pores. The two pore fields, which outline the five petals, are petaloid in shape. The pore fields, which are composed of pore pairs of the dot and dash type, in which one pore becomes slit-

like, are wide, extending from apex to ambitus, and converging towards apex and peristome. Peristome on adoral surface, central and pentagonal, with five interambulaeral bourrelets, representing the rounded blunt projections from each ambulacrum adjacent to the peristome, and five ambulaeral phyllodes, representing the ambulacral pores. The phyllodes indicate the petaloid arrangement developed on the aboral surface, and are distinct on one specimen. The five bourrelets and five phyllodes form the floscelle. The periproct is on adoral surface at posterior end of test in the fifth interambulaeral area close to ambitus.

Dimensions.—Height—Holotype, 49 mm. ; Paratype, 41.5 mm. ; Plesiotypes, (1) 41 mm., (2) 41.5 mm. Diameter of adoral surface from periproct to 3rd ambulaeral—Holotype, 74 mm. ; Paratype, 70.5 mm. ; Plesiotypes, (1) 61 mm., (2) 66 mm.

Occurrence.—Holotype, Gorge east flank of Cape range, west of Exmouth Gulf Outcamp, North-west Division, Western Australia, coll. E. A. Rudd. (Com. Pal. Coll. No. 184). Paratype, same locality as holotype. (Com. Pal. Coll. No. 185). Plesiotypes, Open gorge, north of Mt. King, Cape range, coll. E. A. Rudd ; 4.7 miles from mouth of Badjirajura Creek, Exmouth Gulf, coll. Caltex (Australia) Oil Development Pty., Ltd. (Com. Pal. Coll. Nos. 186, 187).

Observations.—Morley Davies states that “the genus is remarkable in having jaws of a Holectypoid, the Cassidulinoid floscelle and Clypeastroid petals.” The genus is typically represented in *C. westraliensis*, the four specimens available for examination being uniform in shape but varying in height and diameter. Tate, in 1893, described from the Tertiary beds at Table Cape, Tasmania, an echinoid under the name of *Conoclypeus rostratus*. The specimen, which is in the Tate Museum, Geology Department, University of Adelaide, has been re-examined, and belongs to the genus *Echino lampus*. At the time when Tate described his form, the beds at Table Cape were considered Eocene in age, but they are now referred to the Miocene, being most probably Middle Miocene. The limestone in which *C. westraliensis* is found, contains a foraminiferal assemblage typical of the Middle Miocene in the Indo-Pacific region and includes such forms as *Cycloclypeus posteidae* Tan and *Lepidocyclina (Trybliolepidina) martini* (Schlumberger). There is, therefore, little doubt that the genus ranges to a much higher horizon in the Tertiary in the Indo-Pacific region than previously considered.

REFERENCES.

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DESCRIPTION OF PLATE.

All figures $\frac{7}{8}$ natural size.

- Figs. 1–3. *Conoclypeus westraliensis* sp. nov., Cape Range, Exmouth Gulf Station, North west Division, Western Australia.
 „ 1. Side view of Holotype, showing typical *Conoclypeus* shape and characteristic surface ornamentation.
 „ 2. Adoral surface of paratype, showing peristome, periproct, 5 interambulaeral bourrelets and 5 ambulaeral phyllodes.
 „ 3. Aboral surface of holotype, showing 4 genital pores and slightly praecentral apical system.